PATENT
Docket No. 99-2

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT:	Robert A. Wiedeman et al
SERIAL NUMBER:	09/334,386
FILING DATE:	June 16, 1999
FOR:	ISP System Using Non-Geosynchronous Orbit Satellites
GROUP ART UNIT:	2666
EXAMINER:	M. Jagannathan

CERTIFICATE OF MAILING UNDER 37 CFR 1.8

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PATENT
99-2

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF APPEALS

Appeal No._____

In re Application of: ROBERT A. WIEDEMAN ET AL
Serial No.: 09/334,386
Filed: June 16, 1999
For: ISP SYSTEM USING NON-GEOSYNCHRONOUS ORBIT SATELLITES

APPELLANTS' BRIEF ON APPEAL

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF APPEALS

In re Application of: ROBERT A. WIEDEMAN ET AL	: Date: April 29, 2004
Serial No.: 09/334,386	: Group Art Unit: 2666
Filed: June 16, 1999	: Examiner:M. Jagannathan
For: ISP SYSTEM USING NON-GEOSYNCHRONOUS ORBIT SATELLITES	:

APPELLANTS' BRIEF ON APPEAL

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This appeal is taken from the decision of the Examiner in the Office Action dated November 19, 2003 finally rejecting Claims 1-17 and 26-39 in Paper No. 9 of the above-identified patent application. This brief is submitted in accordance with the provisions of 37 C.F.R. §1.192.

REAL PARTY IN INTEREST

The real party in interest is Globalstar L.P. which acquired rights to the present application by way of an assignment from the inventors.

RELATED APPEALS AND INTERFERENCES

There are no other appeals or interferences known to appellants, appellants' legal representative, or the assignee which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

STATUS OF CLAIMS

Claims 1-17 and 26-39 are currently pending in this application and were finally rejected in the Office Action dated November 19, 2003. Appellants appeal from this final rejection.

STATUS OF AMENDMENTS

With regard to the status of amendments, two Office Actions were issued during prosecution of this application. Claims 1, 17 and 39 were amended and claims 18-25, 40 and 41 were canceled in response to the first Office Action dated July 16,

2003. No claims were amended and claim 42 was added in response to the second and final Office Action dated November 19, 2003; this amendment has not been entered. The claims as they currently stand are presented in the Appendix.

SUMMARY OF INVENTION

In the specification on page 13, line 14 through page 15, line 15 the following Summary of the Invention is presented: In one aspect this invention solves the foregoing problems by integrating an Internet Access Point (IAP) directly into a satellite. Since the Internet uses a protocol known as TCP/IP (Transmission Control Protocol/Internet Protocol) as its transport mechanism, and since minimizing the delay of packet data is important, this invention provides a low delay, global transport mechanism to optimize satellite delivery of Internet Services (IS).

A method in accordance with this invention, and apparatus that operates in accordance with the method, routes multiple copies of a given packet between a source node and a destination node using a plurality of satellites and at least one gateway.

This invention provides a satellite communication system that includes a plurality of satellites, such as low earth orbit satellites, and a plurality of gateways. The satellite communication system is bidirectionally coupled to a terrestrial communication system through at least the plurality of gateways. The satellite communication system and the terrestrial communications system together form a data communication network having a plurality of nodes including source nodes, destination nodes and intermediate nodes. Multiple copies of a packet can coexist within the data communication network and the packet and its one or more copies are routed, using at least in part satellite-resident routers and gateway-resident routers, over a plurality of different paths between a particular source node and a particular destination node. At least one duplicate copy of a given packet is simply ignored during the execution of a packet reordering procedure in the destination node. Certain of the paths are carried over satellite-to-satellite cross-links, while certain other ones of the paths are carried over satellite-to-gateway uplinks and downlinks, and at least one path exists between a user terminal and at least one satellite.

In a preferred embodiment the packets are TCP/IP (or equivalent protocol) packets containing information for enabling the selective destruction of a duplicate packet to occur.

The plurality of gateways couple the satellite communication system to the terrestrial communication system at a plurality of points, including at least at one of

regional networks, national networks, commercial networks, Internet Service Providers (ISPs), or directly to a backbone network.

In accordance with a method of this invention for packet data transmission through a data communications system comprising satellite routers and terrestrial routers, the following steps are executed: originating a stream of packets at a source node; selectively duplicating individual ones of the stream of packets and operating the satellite routers to route duplicate packets over different paths, including wireless paths through a medium subject to transmission impairments; and reconstructing the stream of packets from received packets while ignoring an arrival of an already received and valid packet.

The step of selectively duplicating is performed in at least one satellite router in response to at least one criterion. The at least one criterion can be one of a measure of the quality of the medium; whether the packet was previously duplicated; a number of remaining hops from the satellite router to a destination node; a current available bandwidth; a user service agreement; a direction of transmission, from source to destination or from destination to source; and whether multicasting is desired.

ISSUES

The issues in this appeal are:

Whether claims 1-7, 10, 15-17, 26-30, 33, 37-39 are anticipated by Chao under 35 U.S.C. 102(e);

Whether claims 8-9, 31-32 are unpatentable under 35 U.S.C. 103(a) over Chao.

Whether claims 11-14, 34-36 are unpatentable under 35 U.S.C. 103(a) over Chao in view of Wiedeman et al.

GROUPING OF CLAIMS

With regard to the specific grounds of rejection that are in issue, it is respectfully submitted that Claims 1-17, 26-39 stand or fall together.

DESCRIPTION OF REFERENCES

In U. S. 6,215,776 to Chao, filed October 8, 1997, issued April 10, 2001, there is disclosed a multimedia communication system having a plurality of mobile, fixed location, and portable terrestrial communication terminals. The system links terrestrial communication terminals together through a network of non-geostationary satellites. The satellites communicate with a communication protocol similar to terrestrial communication protocols to reduce protocol conversion. The source and destination

addressing uses static terrestrial cells for the uplink and the downlink. The terminal data stream is segmented into communication packets at the terrestrial gateway based on the uplink satellite's determination of system parameters. A control satellite dynamically balances up-links and down-links in the terrestrial areas with over-lapping satellite coverage.

In U. S. 6,134,423 to Wiedeman et al, filed December 23, 1997, issued October 17, 2000, there is disclosed a method and system wherein a system gateway determines, from closed loop power control information, a power density at an antenna of a user terminal. The gateway also maintains a record of a duration of time that the power density exceeds a specified threshold. The gateway determines if an averaged transmitted power density associated with the antenna of the user terminal will equal or exceed at least one of a predetermined threshold level, within a specified period of time, or an absolute threshold level. If the gateway determines that a threshold will probably be exceeded if the call connection is maintained, the gateway terminates the connection prior to a time that the user terminal averaged transmitted power density level equals or exceeds the predetermined or absolute threshold level. A tone or a visual indicator may be employed to warn the user that a current connection or call will be terminated. Provisions are made for allowing predetermined types of calls (e.g. emergency calls) to be made during a cutoff period wherein the user terminal is prohibited from placing further calls. It is within the scope of the invention to perform the power density monitoring function also within the user terminal. In this case information may be transferred to the GW over a return link, and majority voting or some other technique can be employed by the GW before terminating the connection. In this case the power density determination made at the GW has priority over that made in the user terminal to prevent a user terminal from intentionally or inadvertently defeating the power density monitoring function.

ARGUMENT

The Examiner has rejected claims 1-7, 10, 15-17, 26-30, 33, 37-39 under 35 U.S.C. 102(e) as being anticipated by Chao U. S. 6,215,776.

The Examiner states regarding claims 1, 6, 7, 15-17, 29-30, 37-39, the claimed satellite communication system comprised of a plurality of satellites and a plurality of gateways is anticipated by system (Figure 1, element 10) with plurality of satellites (elements 12, 14, and 16) and plurality of gateways (elements 20, 24, and 32). The Examiner states the claimed terrestrial communications system is disclosed by network (element 26) and the claimed plurality of nodes including source nodes,

destination nodes and intermediate nodes is disclosed by terminals (elements 22, 28, 30, 36), satellites and gateways. The Examiner contends the claimed multiple copies are selectively generated within network based on criteria is disclosed by system parameters including availability of satellites to link the source and destination gateways which takes into account a direction of transmission – uplink and downlink. Further, the Examiner contends the claimed multiple copies of a packet coexist within the network and are routed, using at least in part satellite-resident routers and gateway-resident routers, over a plurality of different paths between a particular source and destination node is disclosed by source terminal (Figure 1, element 30) transmitting multiple copies of the same packet (Figure 5, element 70) using gateways and satellites over different paths (Figure 1, elements 42, 44, 46, 48). The Examiner concludes the claimed duplicate copy of packet not used during the execution of packet reordering in the destination node or intermediate node is disclosed by destination gateway (Figure 1, element 34) recognizing packets as repeated packets by examination of payload information which includes sequence numbers, directing Appellants' attention to Figure 4 and to column 5, lines 66-67 and column 6, lines 1-15.

Appellants respectfully submit that in Chao '776 there is disclosed a multimedia communication system having a plurality of mobile, fixed location, and portable terrestrial communication terminals. The system links terrestrial communication terminals together through a network of non-geostationary satellites. The satellites communicate with a communication protocol similar to terrestrial communication protocols to reduce protocol conversion. The source and destination addressing uses static terrestrial cells for the uplink and the downlink. The terminal data stream is segmented into communication packets at the terrestrial gateway based on the uplink satellite's determination of system parameters. A control satellite dynamically balances up-links and down-links in the terrestrial areas with over-lapping satellite coverage.

Appellants respectfully submit that in column 5, lines 66-67 and column 6, lines 1-15 there is stated "To enhance communication reliability on links with lower quality of service ("QoS"), a source terminal 30 (Fig. 1) can transmit multiple copies of the same packet 70. "The payload information of the packet 70 includes identical session identification 98 and sequence numbers. Thus, the destination gateway 34 (Fig. 1) recognize the packets 70 as repeated packets. The gateway 34 then compares the payload of the repeated packets. The repeated payloads are compared bit by bit. That is, the first bit of the payload of each packet is compared, then the next bit is compared until each bit has been compared. The value of each original transmitted bit is determined by a simple majority. Since a simple majority is required to determine

"the value of the original transmitted data, it is desirable to transmit an odd number of repeat packets. In a preferred embodiment of the present invention three copies of the terminal data are sent when repetition is desired."

Appellants respectfully submit that no where in any of Fig. 1, element 10, elements 12, 14 and 16, elements 20, 24, 32, element 26, elements 22, 28, 30, 36, Fig. 1, element 30, Fig. 5, element 70, Fig. 1, elements 42, 44, 46, 48, Fig. 1, element 34, Fig. 4 or at column 5, lines 66-67 and column 6, lines 1-15 of Chao '776 is there any teaching, suggestion or implication that multiple copies of a packet are selectively generated within the data communications network based on a criteria that includes at least one of (a) whether the packet was previously duplicated by a previous node and (b) a direction of transmission, from source to destination or from destination to source, hereinafter referred to as (a) and (b), and wherein at least one duplicate copy of a given packet is not used during the execution of a packet reordering procedure in the destination node or at an intermediate node as required by claim 1 of the instant invention and the other claims at issue. On the contrary, Appellants respectfully submit that at column 5, lines 66 through column 6, line 15 there is merely disclosed a destination gateway 34 which recognizes the packets 70 as repeated packets then compares the payload of the repeated packets bit by bit, determining a value of each originally transmitted bit by a simple majority which is required to determine the value of the original transmitted data, concluding it is desirable to transmit an odd number of repeat packets. It is further stated, in a preferred embodiment of Chao '776 three copies of the terminal data are sent when repetition is desired. Appellants respectfully conclude that claim 1 and the other claims at issue are patentably distinguishable over this teaching for the following reasons: inter alia the conspicuous absence of the requirement that multiple copies of the packet are selectively generated within the data communications network based on a criteria that includes at least one of (a) whether the packet was previously duplicated by a previous node, and (b) a direction of transmission, from source to destination or from destination to source; and wherein at least one duplicate copy of a given packet is not used during the execution of a packet reordering procedure in the destination node or at an intermediate node.

The Examiner goes on to state regarding claims 2, 26, the claimed satellite-to-satellite cross-links are anticipated by paths as shown in Figure 1, element 48.

Although Appellants do not necessarily agree that the satellite-to-satellite cross-links as set out in claims 2 and 26 are shown as contended by the Examiner in Figure 1, element 48, nevertheless this rejection fails for the reasons recited above inter alia the conspicuous absence of employing criteria (a) and (b) as recited and the

requirement that one duplicate copy of the given packet is not used during execution as required in claims 2 and 26.

The Examiner goes on to state regarding claims 3, 26, the claimed satellite-to-gateway uplinks and downlinks are anticipated by paths as shown in Figure 1, elements 42, 44 and 46.

Although Appellants do not necessarily agree that the satellite-to-gateway uplinks and downlinks are anticipated by those pointed out by the Examiner in Figure 1, elements 42, 44 and 46, nevertheless claims 3 and 26 are patentably distinguishable over Figure 1, elements 42, 44 and 46 and the remainder of the Chao disclosure for the reasons recited above inter alia relating to the conspicuous absence of the criteria that includes (a) and (b) as recited above and the limitation with regard to at least one duplicate copy of a given packet is not used during the execution of the packet reordering procedure as described in the instant claims.

The Examiner goes on to state regarding claims 4, 27, the claimed satellite-to-user terminal uplink and downlink is anticipated by paths as shown in Figure 1, elements 42 and 46.

Although Appellants do not necessarily agree that the satellite-to-user terminal uplink and downlink is disclosed as contended by the Examiner in Figure 1, elements 42 and 46, claims 4 and 27 nevertheless are patentably distinguishable over Chao '776 for the reasons recited above inter alia relating to the conspicuous absence of the criteria that includes (a) and (b) above and the limitation with regard to at least one duplicate copy of a given packet is not used during the execution of the packet reordering procedure as described in the instant claims.

The Examiner goes on to state regarding claims 5, 10, 28, 33, the claimed TCP/IP or equivalent packets are disclosed by communication between terminals following Ipv4 or Ipv6 and containing payload with sequence numbers and session information as disclosed in column 3, lines 34-38, column 5, lines 66-67 and column 6, lines 1-15.

Appellants respectfully submit that in column 3, lines 34-38 there is disclosed "Typically, communication between terminals 28 and 30 follows a structured communication protocol, such as the Internet Protocol version 4 ("IPv4"), Internet Protocol Next Generation ("IPv6"), or asynchronous transfer mode ("ATM"). A gateway 24 translates the terminal protocol to the satellite communication protocol before transmitting the communication to the satellite 12." Column 5, line 66 through column 6, line 15, previously discussed as teaching recognizing repeated packets, comparing them bit by bit and the desirability of transmitting an odd number of repeat packets, coupled with the previous recitation at column 3, lines 34-38, does not

disclose the TCP/IP packets set out in claims 5, 10, 28 and 33 and further said claims are patentably distinguishable over these recitations in columns 3 and 5 made by the Examiner and the remainder of Chao for the reasons recited above inter alia relating to the conspicuous absence of the criteria that includes (a) and (b) above and the limitation with regard to at least one duplicate copy of a given packet is not used during the execution of the packet reordering procedure as described in the instant claims.

The Examiner has rejected claims 8-9, 31-32 under 35 U.S.C. 103(a) as being unpatentable over Chao. The Examiner contends that Chao discloses all the limitations of the claims except for the claimed constellation of low earth orbit and medium earth orbit satellites. The Examiner continues that at the time the invention was made it would have been obvious to a person of ordinary skill in the art to modify the system of Chao with low earth orbit and medium earth orbit satellites. Further, the Examiner contends that one of ordinary skill in the art would be motivated to do this since they are more recently developed satellites that are not synchronized with the earth's rotation and vary widely in terms of orbital paths and altitudes.

Appellants respectfully contend that no where in Chao is it disclosed, suggested or implied that low earth orbit or medium earth orbit satellites may be employed in the context of the Chao system and accordingly Appellants respectfully disagree that at the time the invention was made it would have been obvious to a person of ordinary skill in the art to so modify Chao. Further, Appellants respectfully contend that claims 8-9 and 31-32 are patentably distinguishable over Chao under 35 U.S.C. 103(a) for the reasons recited above inter alia relating to the conspicuous absence of the criteria that includes (a) and (b) as recited above and the limitation with regard to at least one duplicate copy of a given packet is not used during the execution of the packet reordering procedure as described in the instant claims.

Appellants respectfully submit that the Examiner has the burden of initially presenting a prima facie case of obviousness and that the Examiner cannot satisfy this burden by simply dismissing differences between the claimed invention and the teachings of the prior art as being obvious. Appellants respectfully submit that the Examiner must present an evidentiary record which supports the finding of obviousness. Appellants respectfully submit that it does not matter how strong the Examiner's convictions are that the claimed invention would have been obvious or whether he has an intuitive belief that the claimed invention would have been obvious within the meaning of 35 U.S.C. 103. Neither circumstance is a substitute for evidence lacking in the record.

The Examiner has rejected Claims 11-14, 34-36 under 35 U.S.C. 103(a) as being obvious over Chao in view of Wiedeman et al U. S. 6,134,423. The Examiner

presents a discussion with regard to the Wiedeman et al '423 reference as constituting prior art under 35 U.S.C. 102(e) and sets out suggestions to overcome the rejection under 35 U.S.C. 103(a).

The Examiner states regarding claims 11, 12, 34-35 Chao discloses all the limitations of the claims except for the claimed packets comprising voice data and routing of voice data over semi-permanent paths. The Examiner goes on to state that Wiedeman et al discloses packetized voice signals communicating via uplinks and downlinks through return and forward satellite transponders, directing Appellants' attention to Figure 3A. The Examiner concludes that at the time it would have been obvious to a person of ordinary skill in the art to modify the system of Chao to have packets comprising voice data and routing over semi-permanent paths. The Examiner further concludes one of ordinary skill in the art would be motivated to do this for proper routing of voice communications through the appropriate satellites.

Appellants respectfully submit that in Wiedeman et al '423 there is a disclosed "A method and system wherein a system gateway (18) determines, from closed loop power control information, a power density at an antenna (13a) of a user terminal 13. The gateway also maintains a record of a duration of time that the power density exceeds a specified threshold. The gateway determines if an averaged transmitted power density associated with the antenna of the user terminal will equal or exceed at least one of a predetermined threshold level, within a specified period of time, or an absolute threshold level. If the gateway determines that a threshold will probably be exceeded if the call connection is maintained, the gateway terminates the connection prior to a time that the user terminal averaged transmitted power density level equals or exceeds the predetermined or absolute threshold level. A tone or a visual indicator may be employed to warn the user that a current connection or call will be terminated. Provisions are made for allowing predetermined types of calls (e.g., emergency calls) to be made during a cutoff period wherein the user terminal is prohibited from placing further calls. It is within the scope of the invention to perform the power density monitoring function also within the user terminal. In this case information may be transferred to the GW over a return link, and majority voting or some other technique can be employed by the GW before terminating the connection. In this case the power density determination made at the GW has priority over that made in the user terminal to prevent a user terminal from intentionally or inadvertently defeating the power density monitoring function."

Although Appellants do not agree that Wiedeman et al '423 at Figure 3A as contended by the Examiner teaches voice data and routing over semi-permanent paths as required by claims 11, 12, 34-35, and Appellants respectfully contend that

claims 11, 12, 34-35 are patentably distinguishable over Chao for the reasons cited above inter alia relating to the conspicuous absence of the criteria that includes (a) and (b) as recited above and the limitation with regard to at least one duplicate copy of a given packet is not used during the execution of the packet reordering procedure as described in the instant claims and that Wiedeman et al does little to cure the deficiencies of this rejection. Furthermore, Appellants respectfully contend that notwithstanding one common inventor, Wiedeman, in the '423 reference and the instant claims, the inventive entities are different and there is no suggestion or implication in Chao or Wiedeman that they may be properly combined to reject the claims as contended by the Examiner.

Appellants further respectfully state for the record that the subject matter of the reference and the claimed invention, although distinguishable one from the other as recited above, at the time the instant invention was made were owned by the same person or subject to an obligation of assignment to the person as provided for in MPEP 706.02(l)(1) and 706.02(l)(2).

The Examiner goes on to state regarding claims 13-14 Chao discloses all the limitations of the claims except for vocoded voice data that is generated external to a user terminal and that is input to the user terminal for transmission and vocoded voice data that is generated internal to a user terminal for transmission. The Examiner goes on to say that Wiedeman et al discloses a CDMA sub-system, referring Appellants to Figure 5, element 52, including a vocoder (element 53k) that is external to the terminal and Wiedeman et al discloses a user terminal, referring Appellants to Figure 6, element 13, in a satellite communication system, referring Appellants to Figure 1, element 10, comprising a vocoder (element 13c) for digitizing a user's speech, further directing Appellants' attention to column 10, lines 49-57. The Examiner contends that at the time the invention was made it would have been obvious to a person of ordinary skill in the art to modify the system of Chao to transmit vocoded voice data generated external and internal to a user terminal. The Examiner concludes that one of ordinary skill in the art would be motivated to do this for digitizing speech from a mobile that is external to the system or for efficiently digitizing voice within the same device.

Appellants respectfully disagree that Wiedeman et al '423 teaches that the voice data comprises vocoded voice data that is generated external to a user terminal and that is input to the user terminal for transmission to at least one satellite as required in claims 13 and 14 and further respectfully disagree that Wiedeman et al '423 provides a basis for a person of ordinary skill in the art to modify the system of Chao to transmit vocoded voice data general external and internal to a user terminal as described in the instant claims. Accordingly, Appellants respectfully disagree that

one of ordinary skill in the art would be motivated to do this for digitizing speech from a mobile that is external to the system or for effectively digitizing voice within the same device as required in the claims of the instant invention. Appellants again respectfully submit that no where in Wiedeman et al '423 in Figure 5, element 52, vocoder element 53k (G?), Figure 6, element 13, Figure 1, element 10, vocoder element 13c or the recitation at column 10, lines 49-57 is there a basis for curing the deficiencies of the Chao reference or rendering claims 13-14 obvious under 35 U.S.C. 103(a) as contended by the Examiner.

Regarding claim 36, the Examiner goes on to state that Chao and Wiedeman et al, in combination, disclose all the limitations of the claims except for packets comprising encrypted voice data.

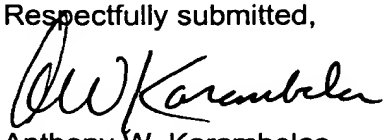
The Examiner therefore takes official notice of the concept and advantage of packets comprising encrypted voice data. According to the Examiner, at the time the invention was made it would have been obvious to a person of ordinary skill in the art to have packets comprising encrypted voice data and one of ordinary skill in the art would be motivated to do this for security purposes.

Appellants respectfully disagree with the Examiner that there is any basis in either of Chao or Wiedeman et al to support the contention that it would have been obvious to a person of ordinary skill in the art to have packets comprising encrypted voice data or that one of ordinary skill in the art would be motivated to do this for security purposes as contended by the Examiner. Appellants respectfully submit, as the Examiner admits, that packets comprising encrypted voice data are conspicuously absent in both of Chao and Wiedeman et al. Appellants respectfully contend that claim 36 is distinguishable over Chao or Wiedeman et al in any combination for the reasons more fully recited above inter alia the improper combination of Chao and Wiedeman et al; the failure of Wiedeman et al to remedy the obvious deficiencies of Chao; and the obvious deficiencies of Chao as set out above inter alia relating to the conspicuous absence of the criteria that includes (a) and (b) as recited above and the limitation with regard to at least one duplicate copy of a given packet is not used during the execution of the packet reordering procedure as described in the instant claims.

Appellants respectfully contend that in view of the above arguments all of the claims currently on appeal have been shown to contain patentable subject matter and to be patentably distinguishable over the prior art, Chao alone or further considered with Wiedeman et al in any combination.

Accordingly, Appellants respectfully request that the final rejection of the Examiner be reversed and that this application be allowed to go to issue.

Respectfully submitted,



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APPENDIX

Claims 1-17, 26-39 as presented below are currently pending in this application.

1. A satellite communication system comprising:

a plurality of satellites and a plurality of gateways,

said satellite communication system being bidirectionally coupled to a terrestrial communication system through said plurality of gateways,

said satellite communication system and said terrestrial communications system comprising together a data communication network having a plurality of nodes including source nodes, destination nodes and intermediate nodes,

wherein multiple copies of a packet are selectively generated within the data communications network based on a criteria that includes at least one of (a) whether the packet was previously duplicated by a previous node, and (b) a direction of transmission, from source to destination or from destination to source,

wherein said multiple copies of a packet coexist within the data communications network and are routed, using at least in part satellite-resident routers and gateway-resident routers, over a plurality of different paths between a particular source node and a particular destination node, and

wherein at least one duplicate copy of a given packet is not used during the execution of a packet reordering procedure in the destination node, or at an intermediate node.

2. A system and network as in claim 1, wherein certain of said paths are carried over satellite-to-satellite cross-links.

3. A system and network as in claim 1, wherein certain of said paths are carried over satellite-to-gateway uplinks and downlinks.

4. A system and network as in claim 1, wherein at least one of said paths is carried over a satellite-to-user terminal uplink and downlink.

5. A system and network as in claim 1, wherein said packets are TCP/IP packets (or packets with equivalent protocol) containing information for enabling said duplicate packets to be ignored.

6. A system and network as in claim 1, wherein said plurality of gateways couple said satellite communication system to said terrestrial communication system at a plurality of points, including at least at one of regional networks, national networks, commercial networks, Internet Service Providers (ISPs), or directly to a backbone network.

7. A system and network as in claim 1, wherein said plurality of satellites comprise a constellation of non-geosynchronous orbit satellites.

8. A system and network as in claim 1, wherein said plurality of satellites comprise a constellation of low earth orbit satellites.

9. A system and network as in claim 1, wherein said plurality of satellites comprise a constellation of medium earth orbit satellites.

10. A system and network as in claim 1, wherein said packets are TCP/IP or equivalent packets.

11. A system and network as in claim 1, wherein at least some of said packets comprise voice data.

12. A system and network as in claim 11, wherein said system routes said packets comprised of voice data over semi-permanent paths that are established during the duration of a call.

13. A system and network as in claim 11, wherein said at least some of said packets that comprise voice data comprise vocoded voice data that is generated external to a user terminal and that is input to the user terminal for transmission to at least one satellite.

14. A system and network as in claim 11, wherein said at least some of said packets that comprise voice data comprise vocoded voice data that is generated internal to a user terminal for transmission to at least one satellite.

15. A system and network as in claim 1, wherein said duplicate packets are transmitted from a plurality of satellite-resident routers to a single gateway-resident router, and are injected into the Internet by the single gateway-resident router.

16. A system and network as in claim 1, wherein said duplicate packets are transmitted from a plurality of satellite-resident routers to a plurality of gateway-resident routers, and are injected into the Internet by each of the plurality of gateway-resident routers.

17. A satellite communication system comprising:

a plurality of satellites and a plurality of gateways,

said satellite communication system being bidirectionally coupled to a terrestrial communication system through at least said plurality of gateways,

said satellite communication system and said terrestrial communications system comprising together a data communication network having a plurality of nodes including source nodes, destination nodes and intermediate nodes,

wherein multiple copies of a packet are selectively generated within the data communications network based on a criteria that includes at least one of (a) whether the packet was previously duplicated by a previous node, and (b) a direction of transmission, from source to destination or from destination to source, and

wherein the multiple copies of the packet are routed, using at least in part satellite-resident routers and gateway-resident routers, over a plurality of different paths between a particular source node and a particular destination node, and

wherein at least one of the multiple copies of a packet is not used during the execution of a packet reordering procedure in the destination node, or at an intermediate node.

26. A system and network as in claim 17, wherein certain of said paths are carried over satellite-to-gateway uplinks and downlinks, and certain other paths are carried over satellite-to-satellite cross-links.

27. A system and network as in claim 17, wherein at least one of said paths is carried over a satellite-to-user terminal uplink and downlink.

28. A system and network as in claim 17, wherein said packets are TCP/IP packets (or packets with equivalent protocol) containing information for enabling said duplicate packets to be ignored.

29. A system and network as in claim 17, wherein said plurality of gateways couple said satellite communication system to said terrestrial communication system at a plurality of points, including at least at one of regional networks, national networks, commercial networks, Internet Service Providers (ISPs), or directly to a backbone network.

30. A system and network as in claim 17, wherein said plurality of satellites comprise a constellation of non-geosynchronous orbit satellites.

31. A system and network as in claim 17, wherein said plurality of satellites comprise a constellation of low earth orbit satellites.

32. A system and network as in claim 17, wherein said plurality of satellites comprise a constellation of medium earth orbit satellites.

33. A system and network as in claim 17, wherein individual ones of said packets conform to TCP/IP or an equivalent protocol.

34. A system and network as in claim 17, wherein at least some of said packets comprise voice data.

35. A system and network as in claim 34, wherein said system routes said packets comprised of voice data over semi-permanent paths that are established during the duration of a call.

36. A system and network as in claim 34, wherein said at least some of said packets that comprise voice data comprise encrypted voice data.

37. A system and network as in claim 17, wherein said multiple copies of a packet are transmitted from a plurality of satellite-resident routers to a single gateway-resident router, and are injected into the Internet by the single gateway-resident router.

38. A system and network as in claim 17, wherein said multiple copies of a packet are transmitted from a plurality of satellite-resident routers to a plurality of gateway-resident routers, and are injected into the Internet by each of the plurality of gateway-resident routers.

39. A method for packet data transmission through a data communications system comprising satellite routers and terrestrial routers, comprising steps of:

originating a stream of packets at a source node;

selectively duplicating individual ones of the stream of packets within the data communications network based on a criteria that includes at least one of (a) whether the packet was previously duplicated by a previous node, and (b) a direction of transmission, from source to destination or from destination to source;

operating said satellite routers to route duplicate packets over different paths, including wireless paths through a medium subject to transmission impairments; and

reconstructing the stream of packets from received packets while ignoring an arrival of an already received and valid packet.